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Influences on the Mother's Decision to Breastfeed her Infant

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Influences on the Mother's Decision to Breastfeed her Infant

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CERTIFICATE OF APPROVAL

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Abstract

Background

Nutrition is essential to the health and development of infants and children. The American Academy of Pediatrics, [the American Academy of Family Physicians] and the World Health Organization recommend breast milk as the best form of nutrition for at least the first year of an infant's life due to the health benefits it provides children and mothers (American Academy of Family Physicians, 2000, Pletta, Eglash, & Choby, 2000). Increasing the rates of both initiation of breastfeeding and duration of breastfeeding are national health objectives.

Methods

The research design is a prospective descriptive study. The study included 43 pregnant women who were receiving prenatal care at a small, private clinic in Buffalo, MN. The data was obtained using a self-designed survey tool to assess the major factors that influence a woman's infant feeding decision. The purpose of this design was to determine the factors that influence a mother's decision on how she intends to feed her infant, find out breastfeeding and/or bottle initiation rates, as well as to determine the duration that women intend to breastfeed.

Results

Significant results obtained indicated that in this community, 46.5% of the pregnant women intended to breastfeed their infant for the first 4-6 months, 23.3% intended to formula feed, and 25.6% intended to use a combination. The majority of women, 65.9%, made this infant feeding decision prior to pregnancy. Of the women intending to breastfeed, 16.3% intended to continue for 2 months and 20.9% intended to breastfeed for 6 or 7 months. Most women (41.5%) reported that they received information regarding infant feeding choices from books. Sixty percent of the women cited health benefits as being the number one reason why they choose breastfeeding.

Conclusions

The results obtained from this study place a high emphasis on the importance of educating both women and men on the benefits of breastmilk for their children. Due to the high number of women who make their infant feeding decision prior to pregnancy, healthcare providers need to find a way to educate these people before their first OB visit on the health benefits of breastmilk. The results also indicated that men have a big influence on their partner's decision to breastfeed or formula feed. Breastmilk encouragement needs to be directed towards both men and woman at a young age in order to increase breastfeeding initiation rates to meet national health goals.

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I. The Problem

Introduction to the Study

Breastfeeding is an important health concern for our nation. The American Academy of Pediatrics, [the American Academy of Family Physicians] and the World Health Organization recommend breast milk as the best form of nutrition for at least the first year of an infant's life due to the health benefits it provides children and mothers (American Academy of Family Physicians, 2000, Pletta, Eglash, & Choby, 2000). According the American Academy of Pediatrics, mother's milk is the most complete nutrition for infants, and has a range of benefits for the health, growth, immunity, and development of infants (American Academy of Pediatrics [AAP], 1997). Increasing the rates of both initiation of breastfeeding and duration of breastfeeding are national health objectives.

Nutrition is essential to the health and development of infants. Breast milk is superior to formula because, in addition to breastmilk's nutritional advantages, it protects against infection, promotes normal infant development and has other long-term consequences for metabolism and disease later in life (Oddy, 2001). One of the maternal benefits is that following delivery, breastfeeding provides an immediate nurturing environment that helps to increase bonding between mother and child. Despite the vast epidemiological and scientific evidence supporting breastfeeding, many mothers are still not choosing to breastfeed their infants.

Background to the study

Despite knowing the benefits of breastfeeding for mothers and baby, many mothers today choose not to breastfeed their infants. Currently in the United States, the in-hospital breastfeeding initiation rate is 64%, the breastfeeding rate at six months postpartum is 29%, but only 16% of mothers are still breastfeeding at one year (Hill, 2000). These percentages fall short

of the Healthy People 2010 goal for breastfeeding, which states that it would be desirable to increase the number of mothers who initiate breastfeeding to at least 75%, increase the number of mothers who continue to breastfeed their infant until 6 months of age to 50% and also increase the number of woman who are still breastfeeding at one year to 25% (Healthy People 2010 Report, 2000). National efforts to increase breastfeeding initiation rates have been somewhat successful, but still less than 1/3 of infants are being breastfed beyond 6 months of age (Dobson, Murtaugh, 2001). Since the US Surgeons General's Report stated that breastfeeding should be encouraged, our country has gone from a low initiation rate of 20% in 1979 to 68.4% in 2000 (Dobson, Murtaugh, 2001).

Current research has shown that breastmilk has nutritional, immunological, and developmental benefits to infants and children that are superior to formula. It has been called the gold standard of early infant nutrition as compared to all forms of artificial infant feeding (Kloeblen-Tarver, et. al). Breastmilk is unique in that it changes composition during individual feedings and over time, to provide optimal nutritional and immunological benefits to the baby (Pletta et al, 2000). Breastmilk contains antimicrobial, anti-inflammatory and immunomodulating components that act together to decrease infections and increase both short-term and long-term immunity for the baby. Breastmilk also has a fatty acid composition that plays an important role in neuropsychological development leading to potential increases in cognitive development later in life (Dobson, Murtaugh, 2001). Breastmilk has a low casein protein content and modest nitrogen composition that makes it easily digestible. These special properties are what make breastmilk superior to formula, which has a grossly similar composition, but does not contain a multitude of protective factors (Pletta et al, 2000), as well as species specific proteins and long chain fatty acids.

Infants fed supplemental formula instead of breastmilk have been shown to have more health problems. When comparing formula fed babies with breastfed babies, the formula fed babies had an increased incidence of gastrointestinal illnesses, respiratory illnesses, and ear infections (Dobson, Murtaugh, 2001; Oddy 2001). Other research studies have shown that the more breastmilk an infant receives in the first six months of life, the less likely the infant is to develop health problems. These health benefits include a reduced incidence of asthma, obesity, tooth problems, and sudden infant death syndrome (Dobson, Murtaugh, 2000; Oddy, 2001). In the long term, breastfeeding appears to have health benefits for metabolism, development and protection against diseases later in life (Oddy 2001).

Besides the benefits for the baby, breastfeeding also has many health benefits for the mother. Women who are solely breastfeeding without formula supplementation are unlikely to ovulate in the first few months thus decreasing their chances for pregnancy (Pletta et al, 2000). The Lactation Amenorrhea Method (LAM) of contraception has been documented as an effective means of contraception, stating that if a woman is fully breastfeeding her baby during the first 6 months post-partum, with minimal supplementation, and if she is amenorrheic, she will have less than a 2% risk of becoming pregnant during that first 6 months (Pletta et al, 2000). Other maternal benefits include maternal weight loss, protection against pre-menopausal breast and ovarian cancer, and bone remineralization creating a lower risk of osteoporosis (Dobson, Murtaugh, 2001, Pletta et al 2000). Along with the health benefits mothers obtain from breastfeeding, it also provides the mother with frequent opportunities for physical contact and emotional attachment with her child.

Besides infant and maternal benefits there are economic benefits to breastfeeding. Formula on average can range between $1200-$4000 for the first year, with the average cost

being $1,884/year based on Ross Laboratory's estimate of infant formula requirements (www.kidsource.com). Studies have shown that formula-fed babies, in general, contract three more illnesses a year than breastfed babies, which translates into millions of dollars per year (Dobson, Murtaugh, 2001). Also, in the workplace, support of breastfeeding employees results in economic benefits to employers including lower absenteeism due to infant illness, increased loyalty, and improved productivity (Dobson, Murtaugh, 2001).

So who are the women out there that are choosing to breastfeed? Breastfeeding initiation rates tend to be the highest among women who are white or Non-Hispanic, employed part-time, not in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and those living in the Mountain or Pacific regions (Dobson, Murtaugh, 2001). Breastfeeding is also more prevalent among older, middle and upper-income, well-educated and married women (Dix, 1999; Wagner, Wagner, 1999). A woman's positive attitude and enthusiasm about breastfeeding is also a strong predictor for the intention to breastfeed (Kloeblen-Tarver, Thompson, Miner, 2002). Since 1990, the group with the largest increase in breastfeeding initiation rates have been those who have in the past been less likely to breastfeed-women who are black, less educated, employed full-time, and less than 20 years old (Dobson, et. al, 2001).

Women who initiate breastfeeding usually have made the decision about feeding choice before pregnancy or early on in the pregnancy (Hill, 2000, James, 1999, Newton, 1991). Strong predictors of a woman's decision to initiate and sustain breastfeeding are a supportive partner, her positive attitude concerning breastfeeding, confidence in her ability to breastfeed, and a strong family support system (Pletta et al, 2000). Mothers whose physicians encourage breastfeeding are much more likely to initiate breastfeeding. Early prenatal counseling on the

benefits of breastmilk have also shown an increase in the number of mothers attempting to breastfeed their infants (Pletta et al, 2000).

All healthcare professionals have a responsibility to promote and support breastfeeding by providing accurate information and appropriate, timely lactation management. Breastfeeding education can be incorporated into prenatal visits identifying all the benefits of breastfeeding previously discussed. There are currently a few programs that encourage and promote breastfeeding and work to assist mothers and their healthcare providers in making this important decision. The American Dietetic Association (ADA), the International Lactation Consultant Association, La Leche League International, Nursing Mothers' Counsel, and breastfeeding task forces at local regional and state levels are a few of the programs that collaborate to promote breastfeeding.

Statement of problem

Despite all of the information on why breastmilk is best for the baby, there still remain a large number of women who choose to not initiate breastfeeding. Of the women who do choose to begin breastfeeding, only 29% are still breastfeeding at 6 months duration even when the literature recommends breastmilk over formula for the first year of an infant's life (All about Breastfeeding, 2000). So why are women choosing not to breastfeed? Why are women choosing to breastfeed for a short duration? When are they making these decisions? These are important questions that medical professionals must answer to be able to better provide information to their patients and help increase breastfeeding initiation rates.

Purpose of Study

With all of the research available to mothers, most people are aware that breastmilk is the best nutritional feeding choice for their child. Yet in light of this information only a little more

than half of women are choosing breastmilk over formula. And at 6 months of the infant's life, less than 1/3 of women are meeting the goal to still be breastfeeding their baby. The current decline in breastfeeding rates after the first few months is disappointing because many health benefits are being lost (Dobson, et. al). Increasing the rates of both initiation of breastfeeding and duration of breastfeeding are national health objectives that this paper attempts to address.

The purpose of this study is to determine the factors that influence feeding decisions, breastfeeding and/or bottle initiation rates, as well as breastfeeding duration. In order to determine infant feeding choices, many different aspects of the decision to breastfeed must be addressed. Areas to be addressed in this study are demographic information, prenatal care, sources of breastfeeding information, timing of decision, feeding preference, type of feeding selected, duration of breastfeeding, factors influencing decisions to breastfeed and/or bottlefeed, and factors that would have encouraged bottle-feeding mothers to breastfeed. A survey tool was utilized to assess these topics.

These questions are important to ask pregnant women, to determine trends and reasons for their decision. From the analysis of this data, certain trends may come into focus that are associated with mothers who choose to breastfeed and mothers who choose to bottlefeed. With this information, it is the hope to increase awareness of the reasons why women choose to breastfeed, in order to potentially help to inform women of the multiple benefits of breastmilk and the importance of making the decision to breastfeed their infant.

Definition of terms

Antimicrobial: an agent that destroys or prevents the development of microorganisms.

Anti-inflammatory: an agent that counteracts inflammation

Breastfeeding: in this research breastfeeding will be defined as primarily feeding an infant with breastmilk, without regular formula supplementation.

Bottle-fed: in this research, a bottle-fed baby refers to an infant who's nutritional feedings come solely from supplemental formula and not breastmilk.

Gestation: the period of carrying a baby in the uterus from conception to birth, otherwise referred to as pregnancy (Guralnik, 1980).

Healthy People 2010 Report: goals and national health initiatives provided by the U.S. Government that were released earlier this year building on initiatives pursued over the last two decades.

Immunomodulatory: the alteration of immune responses with monoclonal antibodies, cytokines, glucocorticoids, immunoglobulins, or related agents known to alter cellular or humoral immunity.

Post Partum: pertaining to the six-week period following childbirth, during which progressive physiological changes restore uterine size and system functions to non-pregnant status.

Rural: a non-urbanized city setting, located 30 miles or more from a metropolitan area and consisting of less than 12,000 people.

Women, Infants, and Children (WIC): a special supplemental food assistance program organized by the USDA for families who are in need of assistance.

Assumptions and limitations of study

An assumption of this study that needs to be addressed is the idea that mothers will actually do what they say they intend to do in the survey. It is possible that mothers may have lofty goals for breastfeeding intent and duration of breastfeeding, but that they may not follow

through with these goals. This assumption was carefully addressed when drawing conclusions from the data. Certain questions of concern with this assumption are those that address future breastfeeding intent and how many months the subjects intend to breastfeed. This assumption was minimized due to the fact that there were only two questions in the survey that asked the mothers to report future intent. Another assumption that may have skewed results was that mothers were able to correctly recall information about how they or their mothers fed their infants in the past. In order to minimize possible incorrect responses or guesses due to inaccurate recall, patients were given the option to select "I don't know" as an answer to these questions.

A limitation of this study is that the data probably cannot be extrapolated to a larger population. Because of the small sample size and the small rural clinic in Buffalo, MN, these results may not be generalizable to other populations. Using a small survey of the targeted 20-30 women enabled me to obtain knowledge about these specific women and data from this small number could possibly be extrapolated to the community as a whole but could not go much farther than that. Also the fact that my population is in a rural Northwestern suburb of Minneapolis, MN my data might not represent women as a whole in the Metropolitan area or on an even broader scope, Minnesota.

Another limitation of this study surrounded the choice of my study population in a small clinic in Buffalo, MN. Reports and data that were obtained from this site potentially were skewed because of the perceived close relationship between the OB patients and their provider. In a smaller clinic with fewer patients, providers may have more time to counsel and encourage their patients to breastfeed than in a busier clinic in a larger metropolitan area. This variable

could have been a key factor influencing women to breastfeed at a rural site, but this result was not supported by the data.

A major limitation of this study is that it is difficult to analyze the data from the subjects that plan to breastfeed and formula feed in combination. Since it is difficult to categorize these women into the method that is being used more frequently and also since there are not any well-known studies that look ate the benefits of breastfeeding part-time vs. exclusively, this information may not be very beneficial. However, it will be addressed in the survey because some women may respond to this combination category. A final limitation of this study was the researcher's apparent personal bias towards breastfeeding. There is a major interest in learning more about breastfeeding and its benefits for both mother and baby and a belief that breastmilk is the best form of nutrition that all mothers should strive to give to their infants. Due to this some results could be unintentionally interpreted differently or subjects could sense these biases of the researcher and in turn answer questions differently.

Conclusion

The previous information provides an in-depth look into the importance of studying why women are making the decisions they do regarding feeding their infants. Many scholars have studied why breastmilk is superior to formula but there are not as many studies determining why women are choosing to breastfeed or bottle feed. The results from this study will be of importance to other health care professionals and they will hopefully find the conclusions of this study interesting and beneficial. In the following chapter, the benefits of breastfeeding and why women make the infant feeding choices that they do will be more closely reviewed in a thorough literature review. In chapter three, the research design will be presented containing the methodology, procedures, and the research tool used. In chapter four, the survey results are

reported and reviewed and in chapter five a discussion containing a summary, conclusion, and recommendations of the study are reported.

II. Literature Review

Introduction/Organizational Structure

The purpose of this study is to delineate those factors that influence a mother's decision to breastfeed her newborn infant and to determine breastfeeding initiation rates and duration. The literature was obtained from journal articles located on the Pub Med database that was linked to the Augsburg Library homepage. A few articles were also obtained from various organizations on Internet sites.

A thorough literature review reveals that many factors influence a woman's decision to breastfeed her newborn. In order to fully discuss the topic of breastfeeding and to determine why woman make the infant feeding choices that they do, many areas must first be explored. This chapter will review the following: 1) The strength of the evidence of the benefits of breastmilk over formula, 2) Statistics on breastfeeding rates, duration and goals and determining current trends with breastfeeding 3) Reasons mothers state for why they choose to breastfeed, 4) Reasons mothers state for why they choose to bottlefeed or discontinue breastfeeding early, 5) The major factors that are associated with breastfeeding, and 6) Breastfeeding programs and what physicians can do to help increase breastfeeding rates.

Breastmilk Benefits

New parents want to give their baby the very best. Good nutrition is essential to the health and development of infants and children. When it comes to nutrition, the American Academy of Pediatrics considers breastfeeding to be "the ideal method of feeding and nurturing infants" (Healthy People 2010 Report, 2002). "Recent research in the United States and other developed countries among middle class populations have shown nutritional, immunological and developmental benefits of breast milk for the child" (Pletta et al, 2000). Because it comes from

the human mothers, breastmilk is the ideal species-specific food for the human infant (Arora, McJinkin, Wehrer, and Kuhn, 2000). Breastfeeding is superior to infant formula feeding because, in addition to its nutritional benefits, it also protects against infection and diseases (Oddy, 2001) and has long-term metabolic effects, which enhance brain development and growth (Williams, 1995). Breastmilk is easily absorbed and digested and has a low protein solute load which does not strain newborns' immature kidneys. Breastmilk has an increased bioavailability of minerals, vitamins, and proteins to enhance the defense mechanism of the newborn against illness and infection (Arora et al, 2000, Oddy, 2001). Breastmilk plays a special role in the development of a child and is superior in a number of ways to formula. It is because of these studies and their documented benefits of breastmilk over formula, that my research to determine the trends in infant feeding choices is being conducted.

There are 4,000 species of mammals, and they all make different milk. According to the FDA's consumer report, human milk contains at least 100 ingredients not found in formula yet no baby is allergic to their mother's milk (Williams, 1995). Human milk is made specifically for human infants and meets all of their specific nutrient needs (Williams, 1995). When compared to formula, breastmilk has many additional nutritional benefits. Perhaps one of the most amazing facts about breastmilk that makes it superior to formula is its ability to change composition depending on what the mother eats thus, over time providing optimal nutritional benefits for the baby (Pletta et al, 2000). The low protein content of breastmilk is optimal because it presents a decreased nitrogen load to the kidneys (Dobson et al, 2001). Whey is the main form of protein in human milk that is soft and easily digestible for the infant's immature digestive system (Dobson et al, 2001). Human milk provides generous amounts of essential fatty acids, saturated fatty acids, medium-chain triglycerides, and cholesterol, which help to promote optimal development

of the central nervous system (Dobson et al, 2000). Breastmilk also has low sodium content and appropriate mineral content which helps to maintain electrolyte balance and helps to develop the infant's bones (Dobson et al, 2000). Breastmilk contains many factors ideal for the human baby. These specific nutrients and compounds, along with their added benefits, cannot be produced in a laboratory and added to formula. They can only be found naturally, in the mother's milk, which is why breastfeeding is the desired nutritional choice for the first year of life.

Many studies have shown increased immunological benefits of breastmilk versus formula for infants. Currently, the leading cause of death in neonates is an under-developed immune system at birth leading to infection and disease (Dobson et al, 2001). Mortality charts have revealed a difference in risk of death between bottle-fed and breast-fed babies, revealing that bottle-fed babies are more likely to die due to an under-developed immune system (Dobson et al, 2001). The immunological protection provided by breastmilk has been identified as the main reason for this trend (Dobson et al, 2001) indicating that breastmilk boosts the development of the immune systems leading to fewer illness and disease (Oddy, 2001, Williams 1995). According to the FDA's consumer report, eighty percent of the cells found in breast milk are macrophage cells whose function is to kill bacteria, fungi, and viruses. The role of these cells is to destroy invading microorganisms that enter their system and thus protect the baby. Infants also have added protection from pathogens because a mother's milk is "custom-designed" to fight the diseases that are present in their specific environment (Williams, 1995). These cells, found solely in breastmilk, carry important immunological benefits for infants and cannot be developed in a laboratory to be put into formula. An infant's immature immune system needs this added protection, which can be easily provided for them with their mother's milk.

Previous studies have shown that breastfed infants have fewer ear and respiratory tract infections, fewer diarrheal illnesses, and less atopic skin disorders (Arora et al, 2000). Studies have shown that infants who are fed formula have five times more gastrointestinal illnesses, three times more respiratory illnesses, and double the episodes of ear infections (Dobson, Murtaugh, 2001). "Breastfeeding for longer than one month, decreases the incidence of food allergy and respiratory allergy, while breastfeeding for at least 6 months also decreases eczema and skin atopy" (Pletta et al, 2000). Several studies have also shown decreases in breastfed babies for ear infections, meningitis, lower respiratory infection and diarrhea (Pletta et al, 2000; Dobson, Murtaugh, 2001). Chronic illnesses are less frequent and less severe in infants that have received breastmilk and there is a possible protective effect of breastmilk on type-1 diabetes mellitus, Crohns disease, and lymphoma (Pletta et al, 2000). Due to the immense protection of breastmilk against infections, the World Health Organization estimates that "an increase in breastfeeding worldwide by 40% would reduce deaths from diarrhea by 60% and from respiratory infection by 50% in children less than 18 months of age" (Oddy, 2001). Besides immunological protection, breastmilk appears to enhance cognitive development (Pletta et al, 2000). Several reports have linked breastfeeding and especially long-term breastfeeding with cognitive and emotional benefits leading to an earlier achievement of developmental milestones (Dobson, Murtaugh, 2001). Visual acuity has also been found to be significantly higher in infants fed breastmilk versus formula (Pletta et al, 2000). This information is important to understand when trying to persuade mothers to choose breastmilk over formula feeding.

Studies have also shown that the duration that a mother breastfeeds is also linked to the benefits the infant receives. "A dose response relationship exists where the more breastmilk an infant receives in the first six months of life, the less likely the infant is to develop health

problems" (Dobson, Murtaugh, 2001). Studies have also linked exclusive and sustained breastfeeding to health benefits such as decreased childhood obesity and reduced risk for malocclusions or malalignment of teeth (Dobson, Murtaugh, 2001). These studies and resulting statistics are the basis for the current Healthy People 2010 recommendations to feed infants for the first year of their life. Although still beneficial, it is not enough to breastfeed for the only the first month or two of life. For an infant to fully receive the added benefits of breastmilk, mothers should strive to breastfeed their infants for at least the first 6 months, if not the whole first year.

Current Breastfeeding Statistics

According to the U.S. government's healthy People 2010 report, in 1998 45% of African American mothers, 68% of Caucasian mothers, and 66% of Hispanic or Latino mothers were initiating breastfeeding in the hospital (Healthy People 2010 Report, 2002). At six months 19% of African American mothers, 31 % of Caucasian, and 28% of Hispanic or Latino women were still breastfeeding their infant (Healthy People 2010 Report, 2002). According to the same Healthy People 2010 report in 1998, mothers with a college degree had the highest breastfeeding initiation rates of 78% however, only 40% were still breastfeeding at 6 months, and 22% were still breastfeeding at the one-year mark. The percentage rates for high school graduates were identical to those of mothers who had attended some college. This group of women had 55% initiation rates, 21% were still breastfeeding at 6 months, and a 12% were still breastfeeding at one year. The numbers were very similar for those mothers with less than a high school education with 48% initiating breastfeeding, 23% feeding at 6 months duration, and 17% still breastfeeding at one year (All about Breastfeeding, 2002). Pamela Hill, an Associate Professor at the University of Illinois at Chicago reported in 1995 that the initiation of breastfeeding was greatest among women aged 35 or older, women whose income is over $25,000, and college-

educated women (Hill, 2000). Some of this statistical information can be more easily understood in the following table. The Healthy People 2010 goals have been added for reference:

Healthy People 2010 Goals for Breastfeeding:

	Early postpartum	At 6 months	At one year
1998 Baseline	64%	29%	16%
2010 Target	75%	50%	25%

Breastfeeding demographics by race (1998):

	Early postpartum	At 6 months	At one year
Black	45%	19%	9%
White	68%	31%	17%
Hispanic or Latino	66%	28%	19%

Breastfeeding demographics according to education level (1998):

	Early postpartum	At 6 months	At one year
Less than high school	48%	23%	17%
High school graduate	55%	21%	12%
Some college	55%	21%	12%
College graduate	78%	40%	22%

Why Women Choose to Breastfeed

The most commonly reported reasons for breastfeeding were the beliefs that it was "better for the baby" and that it was "natural" (Jones, 1987). Buxton reports, the most popular reasons cited by women for intention to breastfeed are the health benefits to the baby (Buxton, Carlson, Faden, Brown, Paige, & Chwalow, 1991). In this study, some of the responses stated

were "breast-feeding is better for the baby" and "breastfeeding will help the baby fight colds and infections" (Buxton et al, 1991). Dix found that the top reasons that women cited for choosing to breastfeed their infants were: a positive attitude toward breastfeeding, convenience and ease, lack of conflicting responsibilities or schedule, and previous positive breastfeeding experience (Dix, 1991). In a study by Arora, he found that the most significant factors contributing to the mother's decision to initiate breastfeeding included the infant's health, naturalness, and emotional bonding (Arora et al, 2000, Jones, 1987).

Besides the idea that breastmilk is best, many studies have found that women who are more confident about their ability to breastfeed are more likely to do so (Lu, Lange, Slusser, Hamilton, & Halfon, 2000, Pletta et al, 2000). Attitude may be a more important determinant of maternal infant feeding method than demographic characteristics (Hill, 2000, Pletta et al, 2000). Studies have shown that behavioral intentions assessed before the birth were very closely linked to mothers' actual infant feeding practices (Hill, 2000). Therefore it is important to determine when women decide how they will feed their infants so that health professionals can advise and counsel women about the importance of breastfeeding before they have already made their decision.

Other factors that help to influence attitudes toward infant feeding are social supports, such as attitude of the spouse, health care provider's attitude and influence, and birthing centers' polices and practices. Research has shown that a woman's family, partner, and friends are important to the breastfeeding decision. The attitudes of husbands, mothers, and close friends have all been shown to be important factors in making the decision to breastfeed (Hill, 2000). A woman and her physician's attitude about infant feeding have been shown to correspond closely (Hill, 2000) but this statistic may be attributed to women seeking out doctors with attitudes like

their own. In a study by Wagner, "education and occupation were strongly related to attitudes about breastfeeding, and along with doctor's preference these were viewed as the most important influences on a mother's baby feeding attitude"(Wagner C. & Wagner M., 1999). However, in light of all of this information regarding the significance of healthcare providers' attitudes, few women reported having received any feeding advice from their health care providers (Hill, 2000). After reviewing several studies, it can be concluded that health care providers have the opportunity to play a role in a mother's decision to breastfeed their infant. It is the intent of this study to determine how much of a role heath care providers can play in helping their patients make feeding decisions.

Besides the benefits to the baby, breastfeeding also provides many health advantages for the mother including lactation amenorrhea and annovulation, making pregnancy less likely while solely breastfeeding (Dobson, Murtaugh, 2001). Maternal weight loss, protection against pre-menopausal breast cancer and ovarian cancer and bone remineralization to levels exceeding those present before lactation are also known benefits of breastfeeding. (Dobson, Murtaugh, 2001). Immediately after delivery, breastfeeding also causes a surge in oxytocin, a woman's hormone, which in turn helps bring the uterus back to its pre-pregnancy size (Pletta et al, 2000). Women are encouraged to breastfeed for a longer duration, such as six-months or longer, to enhance these effects. (Pletta et al, 2000). Many women today regard breastfeeding as the ideal choice for the infant, but not themselves. They are not fully informed on the added benefits that breastfeeding can bring for them. Because of this, many women choose to formula feed because they believe it is the easier choice for themselves, unaware of the added benefits breastfeeding may hold for them.

In addition to the health benefits for mother and baby, many women choose to breastfeed due to the economic benefits. Besides the high cost of buying formula, cost projections for bottle fed infants and their increased incidence of illnesses translate into millions of dollars per year (Dobson, Murtaugh, 2001). For those infants who are breastfed, money is also saved in the workplace due to fewer workdays parents lose due to infant illness and improved productivity (Dobson, Murtaugh, 2001). Overall there are many reasons women cite as contributing to their decision to breastfeed their infant. It is the intent of this study to determine the top reasons cited in a rural community.

Why Women Choose to Bottlefeed/Discontinue Breastfeeding

The most commonly reported reasons in support of bottlefeeding from mothers were that breastfeeding was inconvenient and embarrassing (Jones, 1987). For women who chose to bottlefeed and also those women who quit breastfeeding early (within one week), the decision to breastfeed was usually made later in the pregnancy, confidence in the ability to breastfeed was lower, and a more positive attitude toward formula feeding was expressed (Buxton et al, 1991). In a research study conducted by two physicians, Lucille Marchand and Mary Morrow, the top six reasons women stated as barriers to breastfeeding were: insufficient knowledge regarding the mechanics of breastfeeding, lack of, or inadequate family support for breastfeeding, lack of adequate health care support, the mother's concern about insufficient milk from the breasts, the desire for a satisfied baby that sleeps through the night without a need for frequent feedings, and discomfort regarding breastfeeding in public (Marchand, Morrow, 1994). These top reasons mothers choose to bottlefeed their infants are important to understand when trying to educate patients on breastfeeding and when helping them to make important infant feeding decisions. Many of the reasons women state for wanting to bottlefeed surround attitude and inadequate

information about breastfeeding. Healthcare providers wishing to give new mothers the confidence to initiate breastfeeding could easily address these top areas.

Some studies have looked at early cessation rates for breastfeeding mothers and have found common characteristics among these women. In a study by Buxton, the investigators found four variables that lead to a decreased duration of breastfeeding. These included: low levels of confidence in the ability to breastfeed, uncertainty concerning the decision to breastfeed, not commencing breastfeeding while in the hospital, and facilities without rooming - in options for the baby during the hospital stay (Buxton et al, 1991). Dix found that "although women reported knowing that breastfeeding was better for the baby, the majority chose to bottle feed due to negative attitudes toward breastfeeding, conflicting responsibilities or schedules, convenience, negative breastfeeding experiences, and health or medical reasons" (Dix, 1991). In a similar study Earle reported that one of the most significant factors influencing a woman's decision to bottle-feed was the desire for the father's involvement in feeding the baby (Earle, 2000). Another similar study, Arora found that the primary reasons for initiation of bottle-feeding over breastfeeding included the mother's perception of the father's preference and mother's uncertainty regarding the amount of milk the infant would receive (Arora et al, 2000).

In a research study conducted by Sheehan, the investigators found that women reported that the main reasons for early cessation of breastfeeding (less than four weeks postpartum) were: not enough milk, difficulty with breastfeeding techniques, sore nipples, and baby disinterest (Sheehan, Krueger, Watt, Sword, & Bridle, 2001). Other, less popular reasons mothers stated in this same study, were that they were not comfortable with breastfeeding, mother's fatigue, poor latching on by the baby, inconvenience, and a mother's need to return to work or school. From these studies, the most common reasons mothers state for bottle-feeding

their infants have to do with attitude, confidence, previous negative experiences, and father's preferences. It is the hope of this research to determine the reasons mothers in rural Minnesota prefer to bottle-feed and to use that knowledge to understand how to best approach pregnant women making these decisions.

The mother's workplace can also be a barrier for the woman who wants to breastfeed. Working mothers frequently mention obstacles in the work place and problems pumping breast milk as reasons not to breastfeed, or to terminate breastfeeding early (Hill, 2000, Deshpande & Gazmararian, 2000). Mothers report a lack of a private place to pump, lack of time to pump, and the cost of pumps as explanations (Hill, 2000, Arora et al, 2000). Most mothers these days do not have the luxury of staying home with their children while they are young. Mothers are returning to work very shortly after the delivery of their infants, often after 6-8 weeks, which makes it very hard to continue breastfeeding. If the goal is to have women breastfeeding for at least 6 months, employers need to accommodate new mothers who desire to breastfeed. This study may help to identify ways employers could assist with encouraging women to breastfeed.

Factors Associated with Breastfeeding

According to the Healthy People 2010 report, rates of breastfeeding are highest among college-educated women and women aged 35 years and older (Healthy People 2010 Report, 2002). Also in this same report, the lowest rates of breastfeeding were found among those whose infants were at highest risk of poor health and development: those born to women aged 21 years and under and with low educational levels. The largest decreases in breastfeeding in the 1980's and early 1990's occurred in women who were black, younger in age, low-income, poorly educated, enrolled in the WIC program, or who had a low birth-weight infant (Freed, 1993). In a similar study by Sheehan et al, demographic characteristics that were most often correlated with

breastfeeding women were: older mothers, more educated women, and multiparous women (Sheehan et al 2001). Several other studies conducted have also found that breastfeeding rates were highest among older, white, college educated, and married women (Deshpande et al, 2000, Wagner & Wagner, 1999). Previous research has shown that intended length of breastfeeding is the strongest predictor of actual length of breastfeeding (Sheehan et al, 2001, Wagner & Wagner, 1999). Demographic characteristics associated with breastfeeding for more than six weeks are similar to those associated with initiating breastfeeding such as education, employment status, and the amount of postpartum information received on the benefits of breastfeeding (Deshpande & Garmararian, 2000). These statistics are important to understand in order to determine which patients may be at risk for making the decision not to initiate breastfeeding, but it should be understood that all women no matter what race, income, or education level should be educated about infant feeding choices.

In a study reported by Dix entitled "Why Women Decide Not to Breastfeed" he found that one half of women made their decision concerning infant feeding methods early during the pregnancy and 41% had already made their decision before conception (Dix, 1991). This high number is supported by other studies that have found that in as many as 75% of the cases, the type of feeding is decided before pregnancy or during the first trimester (Arora et al, 2000, Wagner & Wagner, 1999). These facts indicate that there is really only a small time frame, before conception through the early stages of pregnancy, that health care professionals have to educate and potentially impact breastfeeding decisions. If healthcare providers are to play a significant role in the infant feeding decision process, they need to be aware of when most mothers make this decision so that they can have the greatest impact.

Most woman have reported receiving their information on feeding methods from health care providers, family, and friends (Dix, 1991, Earle, 2000, Marchand & Morrow, 1994) From this group it was found that family members had the most influence on the feeding method (Dix, 1991). In a study by Barton (2001) the sources of support for breastfeeding listed by the mothers included: significant other: 38%, mother: 38%, family: 7%, and health professionals: 14%. In a study by Arora et al in 2000, the most significant factor for mothers to initiate bottle-feeding was the mother's perception of the father's attitude (Arora et al, 2000). Wagner found paternal attitude to be the most influential factor influencing a woman's decision to breastfeed. In this study women who "perceived and stated that their partners had a definite preference for breastfeeding were 10 times more likely to initiate breastfeeding (Wagner & Wagner, 1999). Often healthcare providers overlook the father's role in the infant feeding decision. Through this survey, it is the intent to determine if fathers play a significant role in the mother's decision to breastfeed.

Programs and What Physicians Can Do

Many of the factors that play into a woman's decision to initiate and continue breastfeeding are non-modifiable such as ethnicity, mother's age, education, parity, and income. Medical professionals must focus their teaching on modifiable factors in hopes of increasing the number of women who choose to breastfeed. Some of these modifiable factors are: knowledge and attitude of the mother about breastfeeding, significant others' attitudes, health care providers' attitudes, policies of institutions, and maternal employment environments.

Buxton examined characteristics relating to the timing of prenatal care and breastfeeding educational exposures, and found no significant differences between the groups (Buxton et al, 1991). Also in this study almost 90% had some prenatal care during the first trimester, and more

than 80% had done some reading about breastfeeding during their pregnancy. In addition, investigators found that 73% of continuing breast feeders, 59% of those who quit in the early months, and 67% of women who did not initiate breastfeeding at all attributed this decision to information gained at a class, film, or discussion about breastfeeding (Buxton et al, 1991). These statistics can be confusing when trying to understand the role that healthcare workers provide when guiding a woman's decision to breastfeed. What needs to be further understood is what information pregnant women need and when that information should be given.

Besides prenatal care, physicians and nurses in the hospital can play a crucial role in the initiation of breastfeeding immediately after delivery. Breastfeeding shortly after delivery and frequent contact with the newborn have been found to be predictors in the continuation of breastfeeding (Buxton et al, 1991). In this same study, women who initiated breastfeeding and received assistance with it during the hospital period indicated the important role of physicians, nurses, and lactation consultants to the parents during this time (Buxton et al, 1991). Common reasons often stated for early cessation such as, "fussy baby" and "insufficient milk," might just be misperceptions of normal events in the lactation process during the first week. Again, this justifies the importance of informed medical providers that can be of assistance to new mothers. Buxton (1991) suggested that women at high risk for not implementing their prenatal intention to breastfeed may benefit from special attention, encouragement, and support from their healthcare providers during pregnancy, delivery, and discharge. Health care providers should be informed about a woman's risks for not breastfeeding and provide her with intervention resources. Taken together, Buxton's study suggests intervention in four areas: prenatal patient education to strengthen the commitment to breastfeeding and the confidence with which patients approach it; increased hospital encouragement of contact with the newborn; anticipatory guidance prior to

hospital discharge to dispel any misconceptions surrounding breastfeeding and provide encouragement for success; and early pediatric follow-up to continue encouragement and to address specific breastfeeding concerns (Buxton et al, 1991). These studies all indicate what new mothers may need to help them achieve breastfeeding success and how healthcare providers can best meet those needs.

In a study about provider encouragement, Michael Lu found that women who were encouraged by providers to breastfeed were four times more likely to initiate breastfeeding than women who did not receive encouragement (Lu et al, 2000). In populations traditionally less likely to breastfeed, "provider encouragement significantly increased breast-feeding initiation, by more than threefold among low-income, young, and less-educated women; by nearly fivefold among black women; and by nearly 11 fold among single women" (Lu et al, 2000). Statistics in this same study were reported as follows:

> "The influence of provider encouragement [pre and postpartum by doctors and nurses] also varied by education, household income, marital status, and age. Among women who were 25 years or older, were married, had at least some college education, or had a household income greater than $40,000, about four in five breast-fed if they were encouraged. Without encouragement, only half breast-fed. In contrast, less than two-thirds of women who were younger than 25 years, were single, had a high school education or less, or had a household income of less than $20,000 breast-fed even if they were encouraged. Without encouragement, however, less than one-third of these women breast-fed. Without encouragement, only 11% of single women breast-fed" These results also show that programs that focus on breastfeeding education and support can have a positive influence on sub-populations least likely to initiate breast-feeding (Lu et al, 2000).

Findings in similar studies have shown that provider encouragement can significantly increase the likelihood that a mother will initiate breastfeeding. Mothers have been more likely to breastfeed if their doctor has encouraged breastfeeding, if they have attended prenatal classes on lactation, and if postnatal advice on breastfeeding is given (Lu et al, 2000, Black, 2001). However, the statistic that one in four women have reported that their physician or nurse did not

encourage them to breastfeed indicated that there are many missed chances in promoting breastfeeding among American women (Lu et al, 2000). These findings implicate the importance of training physicians and nurses to support breast-feeding. Most obstetricians, pediatricians, family practitioners, and other health care providers lack the knowledge, skills, and experience to adequately support breast-feeding (Winikoff, 1980). In a study by Michael Power et al, 397 practicing obstetricians were surveyed and most physicians responded that they were uncertain of their qualifications regarding educating their patients about breastfeeding and aiding them in solving breastfeeding problems (Power, Locke, Chapin, Klein, and Schulkin, 2003). In this same study, four out of ten physicians regarded their residency training as inadequate in terms of breastfeeding management. Further training and education materials should be implemented into residency training to increase the number of physicians who are encouraging breastfeeding.

If the goals for breastfeeding in this country are to be met as outlined in the Healthy People 2010, health care providers, MDs, PAs, and nurses, must be prepared to assist potential and current breastfeeding mothers. More training can be implemented during medical providers' education so they are prepared to deal with the questions pregnant mothers may have. This training should provide the medical team with up-to-date, accurate knowledge about the benefits of breastfeeding, as well as means to motivate their patients to initiate breastfeeding. Breastfeeding educational strategies should aim to 1) emphasize correcting a woman's misconceptions and negative attitudes, 2) give her confidence, and 3) enhance positive breastfeeding attitudes. Health professionals should also strive to include family members and her partner in breastfeeding education when counseling women (Kloeblen-Tarver, Thompson, & Miner, 2002). Medical providers should also encourage all women to consider initiation

breastfeeding even if they plan to switch to formula feeding. This can help to influence a mother's future breastfeeding intention (Kloeblen-Tarver et al, 2002).

Some larger steps have been taken at the national level to help increase the number of working women who choose to breastfeed their infant. The "Pregnancy Discrimination Act Amendment of 1999," first introduced by congresswoman Maloney, states that women cannot be fired or discriminated against for expressing breastmilk, or directly breastfeeding in the workplace (Hill, 2000). The "Breastfeeding Promotion and Employers' Tax Incentive Act of 1999 encourages employers to set up a "safe, private, and sanitary environment for women to pump breast milk. A tax credit is provided for employers who set up a lactation location, purchase or rent lactation-related equipment, hire a lactation consultant, or otherwise promote a lactation friendly environment (Hill, 2000). The "Right to Breastfeed Act" ensures a woman's right to breastfeed her child anywhere on federal property where she and her child are authorized to be (Hill, 2000). However, this act does not adequately address all women's breastfeeding needs such as barriers in the workplace and accessibility to breast pumps.

Conclusion

A mother's decision to breastfeed is influenced by numerous, complex factors. Various social, psychological, emotional, environmental, and provider care factors influence and affect whether an infant is breastfed or bottle-fed. This literature review supports the importance of breastfeeding and the relative significance of the factors that contribute to a mother's decision of whether or not to breastfeed their infants. These are all important issues that will be addressed in this research project to determine what main factors are contributing to a woman's decision whether or not to breastfeed.

III. Methodology

Description of Methodology to be used

This research design is a prospective descriptive study. This design used one survey to obtain quantitative and qualitative data to assess the major factors that influence a woman's infant feeding choices. The purpose of this design was to assess perspectives that women have about breastfeeding and look at demographic variables associated with these perspectives to be able to determine why women breastfeed.

Design of Study

The patients that were included in this study were those patients that were receiving obstetrical (OB) care at the Buffalo clinic during a five-week period from March 17th 2003-April 17th 2003. The college approval letter for participation in this study can be found in appendix A. Women in their third trimester were targeted, specifically those who were 24 weeks or greater of gestation. The estimated number of third trimester OB patients being followed in a month between the two OB/GYN physicians at the Buffalo, MN clinic is 40. During the five weeks of data collection, the study was conducted working very closely with Dr. Menzies during an OB/GYN rotation for physician assistant school. For that reason, the majority of the subjects were his patients. Forty-three women were recruited that agreed to participate in the study. This is an appropriate number of subjects to be able to obtain sufficient data from which to draw valid conclusions.

Sample and Population/Source of Data

The women that were recruited to be in this study were those OB patients that are seen at the Buffalo Clinic by Dr. Menzies and Dr. Minke. Dr. Menzies averages about 20 third trimester patients that he follows during a month and Dr. Minke has a similar average. The hope was to

have 20-30 women consent to this study and complete the survey, a desire that was met with the final 43 participants. This final number of participants actually exceeded the average number of patients seen per month by these two physicians at the Buffalo Clinic. In a year, Dr. Menzies and Dr. Minke follow around 80-100 OB patients each. Recruiting the desired 20-30 OB patients for this study translates into 12-15% of the total OB population seen a year at the Buffalo Clinic by Dr. Menzies and Dr. Minke. The Buffalo Clinic approved this study for collection of data during the month of March and April. This approval can be found in appendix B. The IRB approval can be found in appendix C. The Institutional Research Board (IRB) approval number obtained from Augsburg College for this project is 2003-5-2.

Instrumentation

The instrument that was used in this study was a 17-question survey consisting of mostly multiple-choice questions and some short answer, which can be found in appendix D. The survey used was unique to this particular study and was created by modifying several surveys found during the literature review. One of these surveys was from the Pediatrics journal entitled, "Major Factors Influencing Breastfeeding Rates," by Samir Arora (2000). This particular survey tool was a 28-question tool addressing areas such as demographics, type of feeding selected, duration of breastfeeding, and factors influencing decisions to breastfeed. Some additional questions were used from a questionnaire in a research study conducted by Nancy Baker, M.D. of Ramsey Family Physicians. Both surveys had similar designs and questions related to the topics to be addressed in this study. With their approval, a survey was created using similar formatted questions and content that would work for the purpose of this study.

The survey was written incorporating some quantitative questions and demographic data and a few open-ended qualitative questions written to get specific information from each mother.

The use of qualitative data helped in discovering many of the detailed reasons why mothers make infant feeding decisions. The quantitative data helped to describe specific characteristics about the data; such as how many cases fell into a particular category of measurement, and the degree of interrelationship or correlation among certain measurements. The survey tool used a variety of questions to address demographics, prenatal care, sources of breastfeeding information, timing of decision, feeding preference, type of feeding selected, duration of breastfeeding, factors influencing decisions to breastfeed and or bottle-feed, and finally factors that would have encouraged bottle-feeding mothers to breastfeed.

It was the intent that these survey questions got to the root of the research question- what percentage of women are breastfeeding and what are those factors that influence women in their choice of infant feeding, by addressing key characteristics surrounding breastfeeding. The questions that were chosen have been used in other breastfeeding research studies that were found during the literature review. Since some previously developed survey questions were manipulated and other questions were taken from different sources, a pilot study was conducted to help confirm the survey's reliability and validity. Five surveys were given to women who lived in the Northwestern metropolitan suburb area, asking them to fill out the questionnaire and comment on any questions that they did not understand or areas that needed improvement. After reviewing the results from the pilot study, there were no major concerns with the content of the material and a few minor formatting changes were made.

Data Collection and Other Procedures

The survey used was a 17-question questionnaire given to all consenting mothers seen as OB patients during the weeks of March 17th-April 16th 2003 and were 24 weeks or greater gestation. The survey was to be given to pregnant women to assess factors influencing their

decision to breastfeed or bottlefeed. The two nurses that worked with Dr. Menzies and Dr. Minke presented the consent form to the mothers to read while they were waiting in the OB office room prior to their scheduled visit. The consent form was theirs to keep for their personal records and the completion of the survey was their consent for the study. A copy of this consent form can be found in appendix E. Before the survey was handed out and completed, verbal consent was obtained from each subject. If the subject verbally consented to the study, they were given the survey to be completed while they were waiting for their exam. Some women opted to complete the survey out in the waiting room after their OB exam was finished. No names or signatures were recorded on any part of the survey. After the women completed the survey, they were asked to drop it off in a box located on the front receptionist desk in the waiting room but many just opted to leave it on the desk in the exam room. The Institutional Research Board at Augsburg College approved this project as previously described.

Data Analysis

Because this study was descriptive and quantitative in nature, the majority of the data gathering process involved the quantitative analysis of the surveys by comparisons and evaluations of each individual's responses. The responses to the questions were analyzed using the Statistical Package for the Social Sciences (SPSS). Using descriptive statistics, the areas reviewed were frequencies, percentages, descriptions of central tendency (mean), and descriptions of relative position (range and standard deviation). Correlational data was obtained by defining breastfeeding intent as the dependent variable and the factors that influence a woman's decision to breastfeed as the independent variables. From this, bivariable correlational analysis was completed using spearman rho. The intent was to look for common trends and themes that stand out in subjects that intended to breastfeed. It was also reviewed as to what the

common responses were from those mothers who chose to bottle-feed their infant in order to determine trends among these women.

IV. Results

In conducting this research, a 17-question survey was distributed to pregnant women at the Buffalo Clinic in Buffalo, MN. Forty-three women were recruited for the study over a 5-week period at the clinic. Women who were eligible for the study were those coming in for a routine OB visit and who were also 24 weeks or greater of gestation. Of the women who were approached about the study, three women refused to complete the survey.

A sample of 43 women was an appropriate sample size from which to draw conclusions from this study. In an average month, there are approximately 40 pregnant women who are 24 weeks or greater seeking care at the Buffalo Clinic. The goal was to recruit 20-30 women, thus this goal was met. In a year's time, the Buffalo clinic oversees the care for approximately 175 pregnant patients. This sample size of 43 women translates into 24.5% of the population that the clinic sees in one year, making the sample size adequate from which to generalize to a target population.

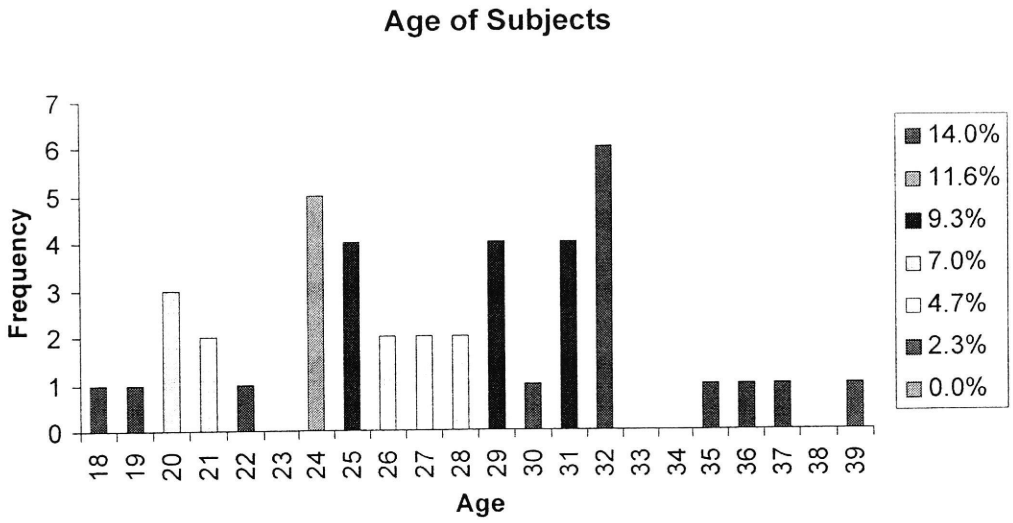
The quantitative data was analyzed using Statistical Package for the Social Sciences (SPSS). The results include a mixture of descriptive statistics and inferential statistics. Descriptive statistics are those that describe, organize, and summarize data. A great deal of quantitative data can be effectively analyzed using descriptive statistics. In this study the descriptive statistics included things such as frequencies, percentages, descriptions of central tendency (mean), and descriptions of relative position (range and standard deviation).

Inferential statistics are those that allow one to make inferences from the sample to the population as a whole in order to generalize about the population from the sample findings. They also help to decide the chance of similar results occurring in the target population, thus being a statistically significant result. To use this type of statistic, sufficient subjects are needed

in the sample and random selection should be used. In this study, tests for *r* (correlational studies) were utilized resulting in probability statements helping to draw conclusions about differences and relationships among groups. Tests for correlation are used to examine two sets of scores to find the extent of their relationship to one another. The value of r can range from –1(indicating a perfect negative relationship) to +1 (indicating a perfect positive relationship). Because the assumptions for the use of parametric statistics were not met in this study, the relationships of the nonparametric data (nominal and ordinal) needed to be examined by using a Spearman Rho rank correlation test (equivalent to the Pearson r). This test is used when comparing two sets of nonparametric rankings to see if there is any relationship. Statistics of this parameter are said to be significant at the .01 or .05 level. A statistic that is significant at the .05 level means there is a 5 out of 100 chance that these values occurred by chance alone. Statistics that are significant at the .01 level demonstrate an even stronger correlation, meaning that there is only a 1 out of 100 chance that these significant data sets occurred by chance. Depending on the questions being correlated, both levels were utilized depending on the level that was met.

Demographic data

The ages of subjects who participated ranged from 18 years old to 39 years old. The mean age was 27. The most common age was 32, with 14% of the total sample reporting that age. The next most frequent age was 24, with 11.6% of the total sample being that age. The majority of the subjects' ages fell between 24-32 years of age. For a complete breakdown of ages refer to graph 1. In using the Spearman rho nonparametric correlation, there was no significance or correlation found between age of the woman and intent to breastfeed her infant.



GRAPH 1

Of the 43 women participating in the study, they ranged from 24-40 weeks of gestation, with the mean gestation age being 31.5 weeks and a standard deviation of 5.06 weeks around the mean. The highest percentage of the population, 18.6%, reported that they were 36 weeks pregnant. For the most part, there was an even representation of weeks pregnant (considering only subjects 24 weeks or greater were studied). There was not any correlation found between weeks of gestation and a woman's intent to breastfeed. This was a hard statistic to analyze in this study because of the narrow range of weeks (24-40 weeks) gestation sampled.

There was a full range of incomes accounted for in the sample population. Annual household incomes ranged from less than $20,000 to greater than $80,000. The income range that accounted for the most frequent answer was $40,000-$59,999, with 30.2% of the population falling into that category. The samples of incomes were very evenly distributed about the mean, and not many significant conclusions were drawn involving income. For this smaller, rural suburb this was probably a pretty accurate sample of income. Using the spearman rho correlation, there was not any correlation found between income and breastfeeding intent.

This study sample included women who have attended some high school and ranged all the way to women who have done post-graduate work. Seventy-four and a half percent of the population had an education of high school graduate, attended some college, or were a college graduate. The subjects that checked "some high school" could have been related to a current high school teenage pregnancy and not a high school dropout. Fourteen percent of the sample had done post-graduate work. Using the same nonparametric correlational analysis, there were not any correlations found between educational level and breastfeeding intent.

The range of response to the question about marital status ranged from 14% being single, 74.4% being married, and 11.6% being partnered. There were not any subjects that indicated that they were divorced or widowed. The high percentage of married subjects most likely involves the nature of the study, pregnancy, and that the majority of pregnant women are married. There was no significant correlation found between marital status and intent to breastfeed.

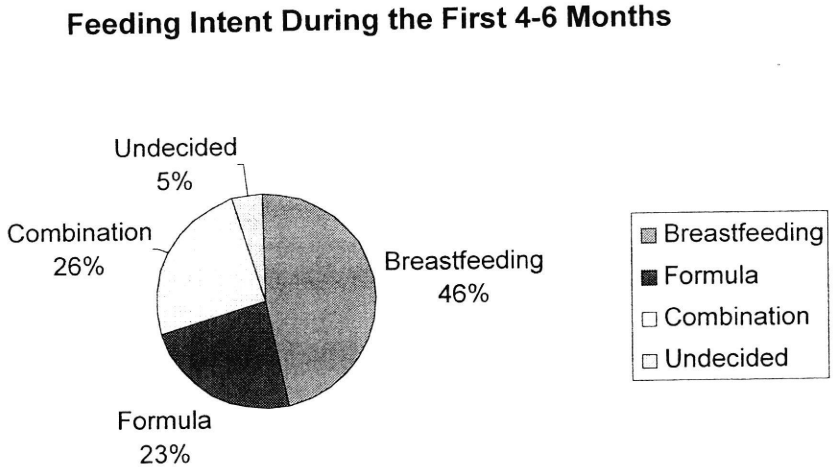
For the majority of the women sampled, 69.8%%, this current pregnancy was their at least their second child meaning that they have had previous experience with making infant feeding choices. For 30.2% of the subjects this was their first child. In utilizing the Spearman rho nonparametric correlation, there was no significance between the number of previous children and the likelihood of a woman to breastfeed her infant.

Feeding preference/type selected

After looking at the sample of 43 women, 46.5% intend to exclusively breastfeed for the first 4-6 months and 25.6% intend to breastfeed and use formula in combination for the first 4-6 months. When combining these two statistics, there are 72.1% of the women that plan to at least initiate breastfeeding and use it in some for form for at least 4 months. That exceeds the current

US breastfeeding initiation rate of 64% and come close to the Healthy People 2010 goal of a 75% initiation rate (www.health.gov). Also in this study, 23.3% of the women intend to formula feed only for the first 4-6 months and 4.7% of the women reported that they were undecided as to how they intend to feed their infant. The women in this study may come close to the Healthy People 2010 goal of 50% of the population continuing to breastfeed until 6 months (www.health.gov). A breakdown of these statistics can be found in graph 2.

GRAPH 2



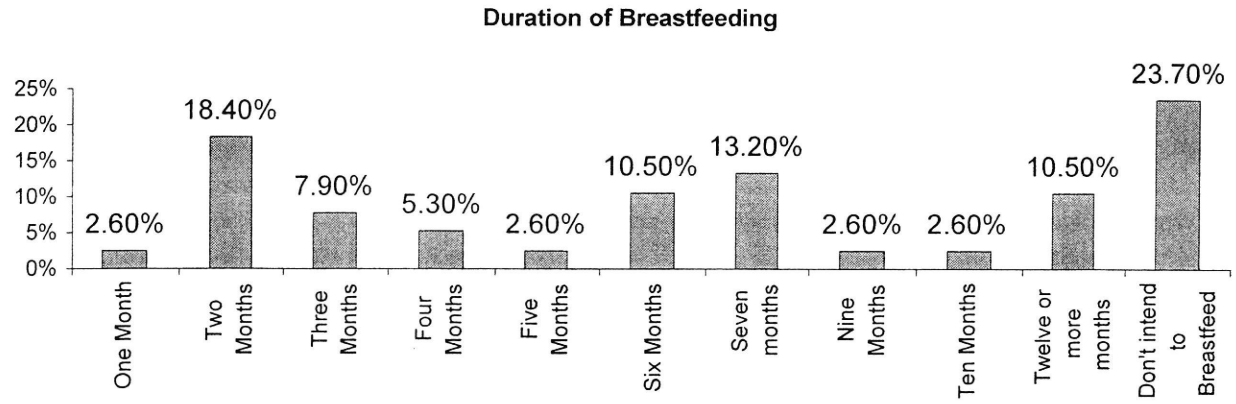
Intent of duration

Women who intended to initiate breastfeeding were asked how long they intended to continue to breastfeed. Twenty-three point seven percent of the women sampled could not answer the question because they stated that they did not intend to breastfeed and 11.6% of the population did not answer the question at all. When analyzing the results and looking at the cumulative percents of the question on breastfeeding duration, 76.3% of the respondents to this question plan to initiate breastfeeding and utilize it for varying durations of weeks to 12 months

or more. Of the respondents, 39.4% plan to utilize breastmilk for at least the first 6 months of their infants' life. Ten point five percent plan to breastfeed for the recommended 12 months. These statistics should be viewed carefully because some women may not view this question as exclusively breastfeeding, thus answering incorrectly. These results are similar to those that were found in question number 8 of the survey that looked at a woman's primary feeding intent for the first 4-6 months. However in question number 11, breastfeeding duration is more specific in regards to months of breastfeeding but it cannot be assumed the mothers were accurately citing the months that they were planning on breastfeeding exclusively. For these reasons, although similar, both questions were unique having different pros and cons to each.

Other statistics found when reviewing question number 11 were that, of the women who did intend to breastfeed, there was a peak of 18.4% that intended to breastfeed for 2 months and another peak between 6 and 7 months with 20.9% of the women intending to breastfeed for this duration. The remainder of the data from question 11 can be found in graph 3.

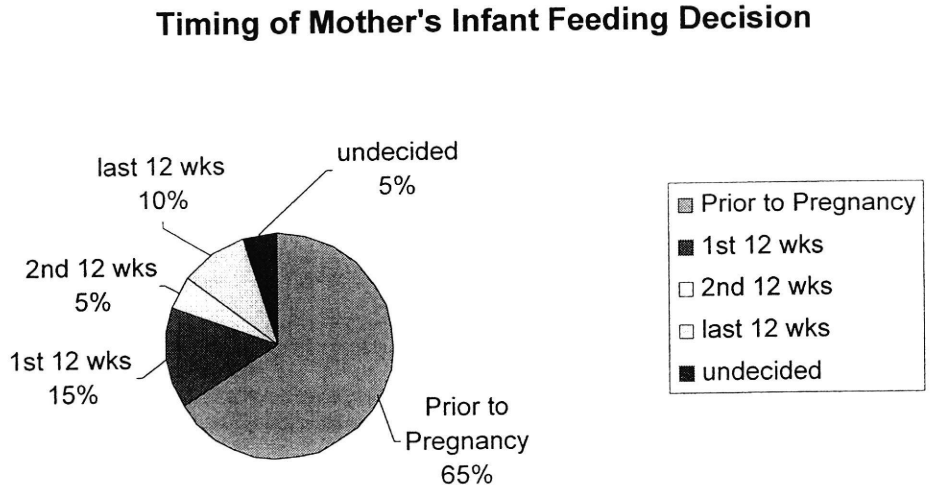
GRAPH 3



Timing of decision

The majority of the studied women, 65.9%, made their infant feeding decision prior to pregnancy, 14.6% made their decision in the first 12 weeks of pregnancy, 4.9% made their decision in the second 12 weeks of pregnancy, 9.8% made their decision in the final 12 weeks of pregnancy, and 2.3% of the women had not yet decided how they were going to feed their infant at the time of the survey. There was a spearman's rho correlation shown between timing of decision and breastfeeding intent that was significant at the .05 level. (see appendix F) This indicated that there were statistically significant statistics demonstrating that most women who were choosing to breastfeed had already made their decision to do so prior to becoming pregnant. This was likely the most significant and useful result obtained from all of the data. A large portion of the subjects (65.9%) had already determined whether they were going to breastfeed or formula feed prior to conception. This statistic makes it difficult for health care providers (providing care during a woman's pregnancy) to play a significant role in a woman's infant feeding decision. These statistics demonstrating timing of decision can be reviewed in graph 4.

GRAPH 4



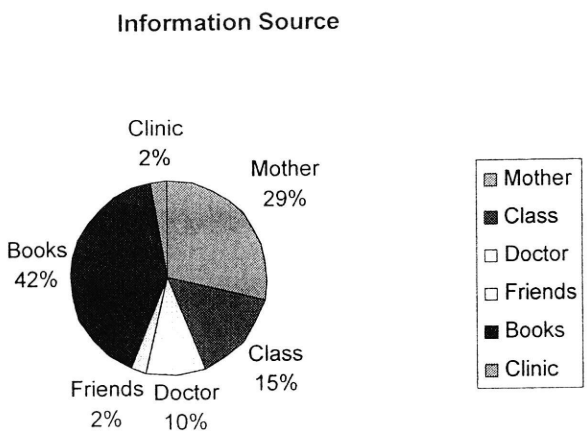
Prenatal care

When looking at how many prenatal visits women had with their provider the mean number of visits was 6.05. Fifty-Eight point one percent of the women surveyed indicated that they had seven or more visits with their provider. These were expected results due to the sample population consisting of women 24 weeks or greater gestation. For the most part, the number of OB visits correlated with the number of weeks pregnant, with about one visit for every four weeks of pregnancy. There was not any correlation found between the number of prenatal visits and intent to breastfeed. This is likely due to the fact that most women are making their infant feeding decision before they are pregnant, thus prenatal care is not playing a significant role in a woman's infant feeding decision.

Sources of breastfeeding information

An overwhelming majority of women, 78%, stated that their hospital or clinic provided them with information on breastfeeding. However there was no correlation found between mothers receiving information about breastfeeding and an increased number of women choosing to breastfeed. This seems logical after learning that most women have already made their infant feeding decision prior to becoming pregnant. There were a wide variety of answers as to where the most information was received pertaining to infant feeding choices. The most common answer receiving 41.5% of the responses was books. The remaining responses can be found in graph #5

GRAPH 5



Factors influencing decision

The survey also looked at whether or not previous infant feeding decisions influenced a woman's intent to breastfeed the infant of her current pregnancy. There was a random distribution of what infant feeding choices these 43 women had made in their previous pregnancies. Close to a third, 30.2%, reported that this was their first pregnancy thus were not qualified to answer this question. Another 30.2% of the women reported that with their previous children, they had primarily breastfed for the first 4-6 months, 20.9% reported that they primarily formula fed in the first 4-6 months and 18.6% of women reported that breastfeeding and formula feeding was used in combination in their previous infant feedings. A spearman rho correlation did not show any significant relationship between a woman's previous infant feeding choice and the choice they have chosen in their current pregnancy.

The mother's studied, were asked to write what their most important reason was for choosing a certain method for infant feeding. Unfortunately, 18.6% of the sample chose not to answer the question. Of those women who did answer the question, 60% cited health benefits as

the number one reason why they choose their feeding method to be breastmilk, while 20% cited a personal preference as their reason, 2.9% were more comfortable with using formula over breastfeeding, 2.9% cited that they chose bottle feeding because it was more convenient, 2.9% cited that they choose breastfeeding because it was inexpensive and 11.4% cited that they choose to formula feed because they were going back to work. Utilizing the spearman rho nonparametric correlation, there was a significance (2-tailed) at the 0.01 level, indicating that most women who were choosing to breastfeed were doing so because of their belief that it was for the increased health benefit for the infant. (See appendix G)

The study participants were also asked what method their mother used to feed her children to look for a correlation between that and their decision. Twenty two percent of the participants' mothers breastfed their infants, and 39.0% of these mother's chose to formula feed their infants. There were no indications of a correlation between a mother's infant feeding choice and the choice her daughter made for her children.

When asked what feeding preference women's partners preferred, the partner's preferences closely mirrored that of the women's. 43.9% preferred breastfeeding, 24.4% preferred formula feeding, 22 % preferred a combination method, and 9.8% of women were unsure what method their husband preferred. There was a significant Spearman's rho correlation at the .05 level, indicating that the husband's or partner's infant feeding preference often mimicked that of the mothers. (See appendix H) This indicates that educating men about the importance of breastmilk for infants might play a significant role in increasing the number of mother's that choose to breastfeed their babies.

As the final question to the survey, the women were asked what was the most important influence in their decision whether or not to breastfeed. An overwhelming majority (72.7%)

picked heath benefits as the number one reason for choosing to breastfeed. The other common answers for choosing formula were personal preferences and not feeling comfortable with breastfeeding. Because almost a quarter of the subjects choose not to answer this question, a significant correlation could not be made between this and intent to breastfeed.

Results conclusion

A summary of the of the more significant results obtained from the women in this study are as follows:

1. When reviewing cumulative breastfeeding duration, 76.3% of respondents plan to at least initiate breastfeeding in the hospital, 39.4% plan to breastfeed for at least 6 months, 10.5% plan to breastfeed for the recommended first year of life, and 23.7% don't plan to breastfeed at all.

2. Those women intending to primarily breastfeed for the first 4-6 months included 46.5% of the sample population, 23.3% of the women studied intended to formula feed only for the first 4-6 months, and 25.6% of the women intended to breastfeed and use formula in combination for the first 4-6 months of their infants life.

3. Of the women who did intend to primarily breastfeed, there was a peak of 18.4% that intended to breastfeed for 2 months and another peak at 6 and 7 months (20.9% of the women) that intended to breastfeed for that duration.

4. The majority of the studied women, 65.9%, made their infant feeding decision prior to pregnancy, 14.6% made their decision in the first 12 weeks of pregnancy, 4.9% made their decision in the second 12 weeks of pregnancy, 9.8% made their decision in the final 12 weeks of pregnancy. This was statistically significant at the .05 level, indicating that the statistics demonstrated that most women who were choosing to breastfeed had already made their decision to do so prior to becoming pregnant.

5. Several factors influencing a woman's infant feeding decision were looked at in this study. Of those studied, a woman's previous infant feeding experiences with her older children and the infant feeding preference that the subjects own mother had chosen did not play a significant role in their current decision. There were two factors that did demonstrate significant correlations between itself and a mother's breastfeeding intent. One of these factors indicated that most women who were choosing to breastfeed were doing so because of their belief that it was for the increased health benefit for the infant (2- tailed spearman rho correlation significant at the 0.01 level). The second significant factor indicated that the husband's or partner's infant feeding preference often mimicked that of the mothers, a significant Spearman's rho correlation at the .05 level.

V. Discussion

Implications

The purpose of this study was to determine the factors that influence a mother's decision on how she intends to feed her infant, find out breastfeeding and/or bottle initiation rates, as well as to determine the duration that women intend to breastfeed. The survey provided the tool to determine these answers for a rural clinic in Buffalo, MN and relate that to other studies. When reviewing what percentage of mother's were choosing to breastfeed, 76.3% of the respondents intend to initiate breastfeeding and 39.4% plan to continue breastfeeding for at least 6 months. The initiation percentage just exceeds the Healthy People 2010 goal of 75% and the 6-month percentage falls short of the Healthy People 2010 goal of 50%. At one year, 10.5% of the respondents intend to be continuing to breastfeed. This falls short of the Healthy People 2010 goal of 25%. It is important to note that these results from Buffalo may be increased due to the discrepancy between a woman's intent and actually meeting that goal. A quarter of the sample population, 25.6%, stated that they intend to use a combination of breastmilk and formula over the first 4-6 months of their infant's life.

According to the literature, breastfeeding initiation rates tend to be higher among Caucasian, middle and upper-income, well-educated and married women. In my study I did not find any significant correlations between women with those specific demographics and higher breastfeeding initiation rates.

In reviewing the results of this survey, other trends on why or why not women are choosing to breastfeed were determined. This particular study did not find any correlations between women deciding to breastfeed due to previous breastfeeding experience, previous exposure and knowledge about breastfeeding because of their mother's choices, amount of

prenatal visits, or various sources of breastfeeding information. It was expected to see more women modeling after their mother and making the same infant feeding choices for their infant as their mother had, but this was not supported by the data. It was also expected that previous breastfeeding exposure and experience with previous children or various sources of information would increase breastfeeding initiation rates but the data did not support this hypothesis either.

Sixty percent of the women who intended to breastfeed, cited heath reasons as the number one reason for their decision to breastfeed. The most common reason women cited for choosing to formula feed their infant was due to personal preferences of feeling more comfortable with bottle-feeding. An overwhelming percentage of women, 65.9%, made their decision whether or not to breastfeed prior to becoming pregnant and another 14.6% made their decision within the first 12 weeks of pregnancy. That is over 80% of the women making their decision before most of them have even seen a physician for their first OB visit. This implies that physicians who encourage their pregnant patients to breastfeed are getting to them too late. Women need to be encouraged to breastfeed long before they become pregnant.

Another significant correlation was determined between a woman's decision and her husband or partner's infant feeding preference. Women were more likely to breastfeed if their partner supported and preferred that decision. This statistic shows the importance of educating men on the benefits of breastfeeding and encouraging them to support their wives or partners in breastfeeding. The majority of women (78%) cited that they had received information on breastfeeding from the hospital/clinic and the number one source cited for receiving information on infant feeding choices was from books. Encouraging males and females of childbearing age to read books on the benefits of breastmilk may be helpful in increasing breastfeeding initiation rates.

Limitations

A major limitation to this research was the small sample size. With a sample of 43 women in a small rural OB/GYN practice this study cannot, with high accuracy, be generalized to other populations. Studies of women in similar rural communities may have similar results but women in urban or suburban areas may have several different findings. Another major limitation of this study is that the survey was a prenatal survey and it cannot be assumed that mothers will actually follow through with their reported feeding intentions. Other limitations may have been that women felt that their results were not completely confidential because many of the women just left their surveys in the exam room instead of remembering to bring them up to the front desk and placing them in the confidential survey box. Because of this, some women may have answered differently if they believed the researcher or the physician would go back and review their results. Another limitation was the difficulty in analyzing the responses of women who choose to use a combination of formula and breastmilk because it was impossible to discern the amounts of each that the women intended to utilize.

The difficulty in analyzing the survey responses of women who chose to bottle and breastfeed was a non-anticipated limitation. Future studies should use surveys with more defined questions and answers to avoid this problem. Utilizing more open-ended questions may help to avoid this problem as well. This survey tool also did not discuss barriers to continued breastfeeding, which would have been an important part of the topic to address.

Discussion

The results of this study demonstrate that women in this rural setting may be meeting the Healthy People 2010 goal of 75% of women initiating breastfeeding (76.3% of this study's subjects intend to initiate breastfeeding). The participants probably will fall short of the Healthy

People 2010 goal of 50% of women still breastfeeding at 6 months (Of this study's subjects, 39.4% intent to continue breastfeeding until 6 months). Ten point five percent of the subjects intend to meet the recommended goal of breastfeeding for the first year of the infant's life.

Women not only need to be educated on the importance of initiating breastfeeding, but also should be strongly encouraged to continue breastfeeding for the recommended one year of life. More women need to understand the benefits of continued breastfeeding even after the initial colostrums and antibody protection is gone from the breastmilk. Not only is breastmilk considered the gold standard for infant nutrition, it protects against infection, promotes normal infant physical and cognitive development, and has shown to have long-term consequences for metabolism and disease later in life (Oddy, 2001).

The remainder of this study helped to determine factors that encourage a woman to breastfeed, in a hope to use these results to increase breastfeeding rates. The results obtained place a high emphasis on the importance of educating both women and men on the benefits of breastmilk for their children. The results indicated that men have an influence on their partner's decision to breastfeed or formula feed. Breastmilk encouragement needs to be directed towards both men and woman at a young age in order to increase breastfeeding initiation rates to meet national health goals. Considering the high number of women who make their infant feeding decision prior to pregnancy, healthcare providers need to find a way to educate these people before their first OB visit on the health benefits of breastmilk.

This study indicates that many women understand that there are health benefits to breastmilk versus formula. However, the literature reveals that many women lack the positive attitude, enthusiasm, partner supportiveness and confidence surrounding breastfeeding that it

takes to sustain breastfeeding for increasing durations of time. Efforts need to be made in this area to help to increase breastfeeding duration.

Recommendations

In order to address the limitation that it cannot be assumed that women will actually do what they say they are going to do would be to follow up the first prenatal survey with other postnatal surveys. The postnatal surveys should be given soon after delivery and then another should be given at 3, 6, and 12 months after delivery. These postnatal surveys would help to determine the correlation between a woman's intent and actual actions and also breastfeeding duration. A suggestion could me made to setting up a file for each of the participants at the initial prenatal visit. This file would contain information such as due date, and more specific information on how to contact the person in the future. Appropriate authorization would allow the doctor to release information surrounding date of delivery. Subsequent correspondence could be conducted through the mailing of surveys to the women at the appropriate times after delivery. Many more subjects would need to be involved in this study because of the potential high rate of subjects that would drop out, not complete all of the surveys, or be lost to follow up. This type of study would require a lot more time, money, and involved approval process but the results obtained would have a more significant value than the results from this smaller and shorter study.

Further studies should also be conducted including a more diverse and larger population to obtain results that could be generalized to other populations. A similar study method should be conducted at various sites including suburban, inner-city metropolitan areas, and other rural sites to obtain a broader population and larger number of subjects. The same survey tool could be utilized and the information from this study could be analyzed in the same way. However, the

difference would be that the results from a more diverse population and a larger number of subjects might then be generalizable to other populations.

Health care providers should not only be aware of the benefits of breastmilk, but also understand the importance of educating both men and women at a young age about breastfeeding. More primary care physicians need to be encouraging women to learn about the health benefits of breastmilk, when doing routine screening such as annual pap and pelvic exams. This would allow women to start thinking about their options before they are pregnant. Many practitioners often ask women about childbearing intent to discuss important aspects such as prenatal nutrition, vitamins needed, and what to expect when trying to get pregnant. It would be easy to discuss or give out a pamphlet of information on breastfeeding along with this other helpful information. Health care providers should recommend that women share this information with their partners. Hopefully by doing this, more women and men will be educated about the importance of breastmilk and will be considering breastfeeding their future children long before conception even occurs.

Conclusions

Overall, the purpose of this study was met, providing information that can be utilized in the future to help increase breastfeeding initiation rates to meet the Healthy People 2010 goals. More time needs to be spent encouraging women and men to breastfeed their children and educating them early on, on the health benefits of breastmilk. Specific barriers leading to early discontinuation of breastfeeding should also be addressed in order to get more women to reach the goals of breastfeeding duration. With continued research on this topic and increased efforts by healthcare providers and other educators promoting breastfeeding, it is promising that these goals will be obtained.

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Appendix A

AUGSBURG
COLLEGE

March 19, 2003

Melissa Melville, PA-S
Clinical phase student

Dear Melissa,

Congratulations! Your thesis proposal has been approved by your committee and the department chair, or designee. There were no significant changes suggested by any o committee members. You may begin collecting data. I truly hope that all goes well f you as you collect and analyze your data.

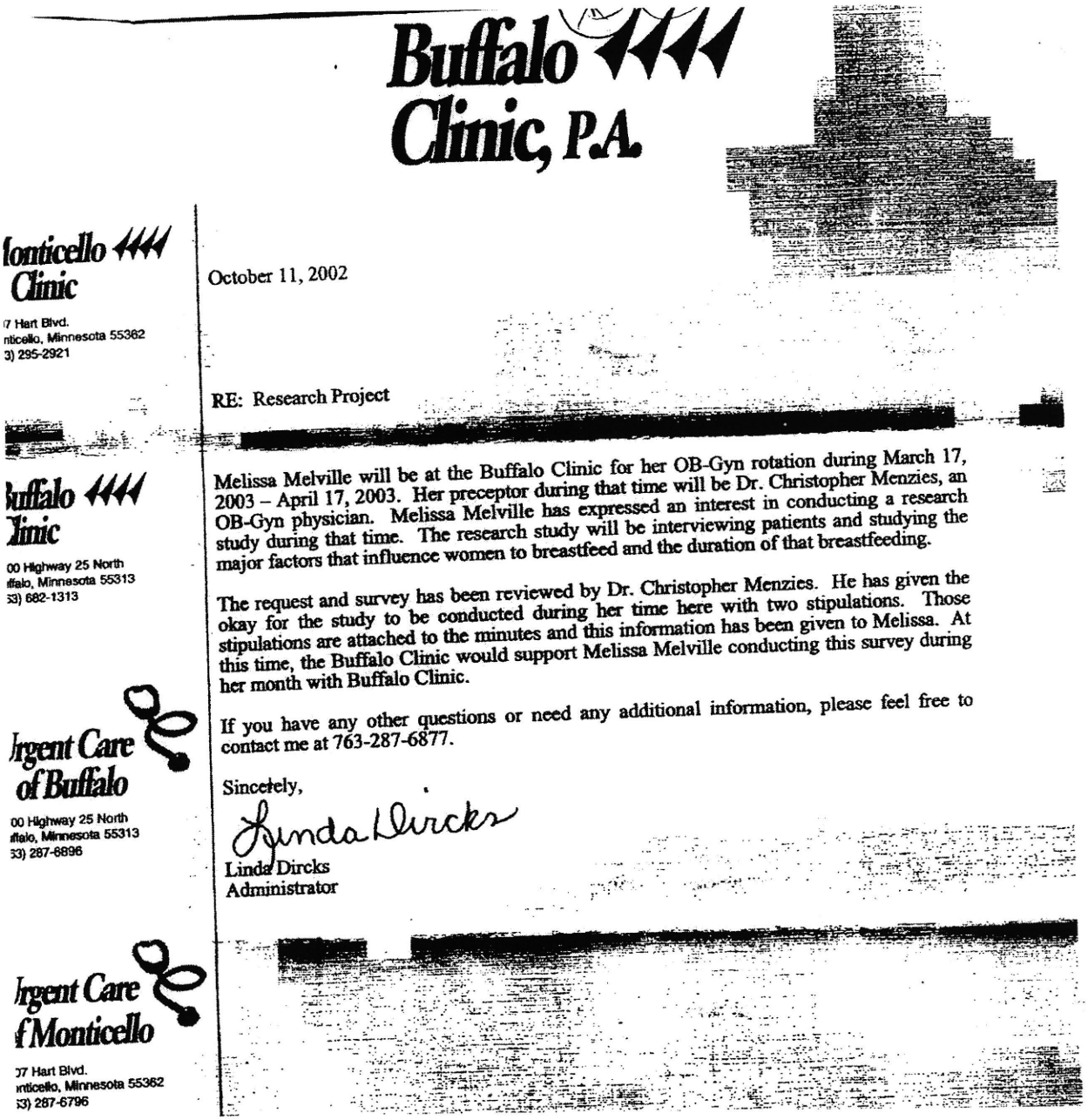
Please feel free to contact me with any questions you may have.

Sincerely,

Dawn B. Ludwig, PhD, PA-C
PA department chair

Enc

Appendix B



Buffalo Clinic, P.A.

lonticello Clinic
7 Hart Blvd.
nticello, Minnesota 55362
3) 295-2921

uffalo Clinic
00 Highway 25 North
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33) 682-1313

Jrgent Care of Buffalo
00 Highway 25 North
ffalo, Minnesota 55313
33) 287-6896

Jrgent Care f Monticello
07 Hart Blvd.
nticello, Minnesota 55362
33) 287-6796

October 11, 2002

RE: Research Project

Melissa Melville will be at the Buffalo Clinic for her OB-Gyn rotation during March 17, 2003 – April 17, 2003. Her preceptor during that time will be Dr. Christopher Menzies, an OB-Gyn physician. Melissa Melville has expressed an interest in conducting a research study during that time. The research study will be interviewing patients and studying the major factors that influence women to breastfeed and the duration of that breastfeeding.

The request and survey has been reviewed by Dr. Christopher Menzies. He has given the okay for the study to be conducted during her time here with two stipulations. Those stipulations are attached to the minutes and this information has been given to Melissa. At this time, the Buffalo Clinic would support Melissa Melville conducting this survey during her month with Buffalo Clinic.

If you have any other questions or need any additional information, please feel free to contact me at 763-287-6877.

Sincerely,

Linda Dircks

Linda Dircks
Administrator

Appendix C

Institutional Research Board
Augsburg College
Box 107

January 30, 2003

To: Melissa Melville

From: Norma C. Noonan, Chair

I am pleased to inform you that the IRB has approved your application the project: Influences on the Mother's Decision to Breastfeed her Infant

___ _ as submitted

__ X__ as revised

__ with the following conditions:

Your IRB approval number which should be noted in your written project and in any major documents alluding to the research project is as follows:

2003-5-2

I wish you success with your project. If you have any questions, you may contact me: 612-330-1198 or noonan@augsburg.edu.
The readers have a few suggestions that I can share with you.

c. Dawn Ludwig

Appendix D

Breastfeeding Questionnaire
Prenatal

1. How old are you? _____

2. How many weeks pregnant are you? _____

3. What is your approximate annual household income? (check one)

____ <$20,000 ____ $20,000-39,999 ____ $40,000-59,999 ____ $60,000-79,999
____ >$80,000

4. What is your highest level of education completed? (check one)

____ Some high school ____ High school graduate ____ Some college
____ College graduate ____ Tech school graduate ____ Post-graduate work

5. Are you: (check one)

_____ single _____ married _____divorced _____ widowed
_____ partnered

6. How many children have you given birth to? _____

7. Were they: (check one)

____ Primarily breastfed the first 4-6 months ____ Primarily formula fed the first 4-6 months ____ Both methods were used in combination ____ This is my first child

8. How do you plan to primarily feed this infant in the first 4-6 months? (check one)

_____ Breastfeed _____ Formula feed _____Combination _____ Not Sure

9. Why did you choose this method? (Please explain)

10. At what point in your pregnancy (or pre-pregnancy) did you make this decision? (check one)

_____ Pre-pregnancy
_____ First 12 weeks of pregnancy
_____ Second 12 weeks of pregnancy
_____Final 12 weeks of pregnancy
_____Have not decided yet

11. If the plan is to breastfeed, how long do you plan to breastfeed? (check one)

____ I don't plan to breastfeed
____ 0-1 months ____ 3-4 months ____ 6-7 months ____ 9-10 months
____ 1-2 months ____ 4-5 months ____ 7-8 months ____ 10-11 months
____ 2-3 months ____ 5-6 months ____ 8-9 months ____ 11 (or more) months

12. What method did your mother use to feed her children? (check one)

_____ Formula _____ Combination ____ Some were breastfed, some
_____ Breastfed _____ Don't know were formula fed.

13. Which method does your husband/partner (if applicable) prefer? (check one)

_____ Formula _____ Combination
_____ Breastfeed _____ Don't know

14. How many prenatal visits have you had with your provider? (check one)

____ 0 ____ 1 ____ 2 ____ 3

____ 4 ____ 5 ____ 6 ____ 7 or more

15. Did your hospital/clinic provide you with any prenatal information on breastfeeding? (check one)

____ Yes ____ No

16. Where did you receive the most information on feeding choices for your infant? (check one or two)

____ Mother ____ Doctor ____ Nurse ____ TV ____ Clinic
____ Class ____ Books ____ friends

17. What was the most important influence in your decision whether or not to breastfeed?

Appendix E

Influences on the Mother's Decision to Breastfeed Study
Consent Form

You are invited to be in a research study regarding factors that influence mother's feeding decisions for their infant. Your were selected as a possible participant because: 1) You are currently receiving prenatal care at the Buffalo clinic. 2) You are currently greater than 24 weeks of pregnancy. I ask that you read this form and ask any questions you may have before agreeing to the study.

This study is being conducted by: Melissa Melville as part of my master's thesis in Physician Assistant studies at Augsburg College, Minneapolis, MN.

Background information:
The purpose of this study is to gain knowledge to what factors influence women to breastfeed their infant. In doing this, factors can be identified in order to more effectively counsel women about infant feeding choices that mothers make.

Procedures:
If you agree to be in this study, I would ask you to do the following things:

1. Complete a 5- minute survey after a regularly scheduled visit at the Buffalo Clinic. Your answers will remain confidential.

Risks and Benefits in the Study: There is no risk to you or your baby to participate in this study. You may choose not to answer any question that you wish. There is no direct benefit to you for being in this study but your participation in this study will help to benefit medical knowledge on issues related to infant feeding decisions. In the event that this survey causes you any distress you can contact the Central Minnesota Mental Health Center in Buffalo. The number is 763-682-4400. If this service is utilized, any charges obtained will be the responsibility of the participant.

Confidentiality:
No one besides this researcher will know you responded to the survey. Your name is not recorded for any part of this study. Reports or anything I may publish will not include your identity or information that will make it possible to identify you. I will not be using direct quotes in an attempt to maintain your anonymity. Research records will be kept in a locked file in my home; only my thesis advisor and I will have access to the records. I will also destroy research records by August 31st 2004.

Voluntary Nature of the Study
Your decision whether or not to participate will not affect your current or future relationship with the Buffalo Clinic or Augsburg College. If you decide to participate, you are free to withdraw at any time without affecting those relationships. You may choose not to answer any question you wish.

Contacts and Questions:
The researcher conducting this study is Melissa Melville, PA student. You may ask any questions that you have now. If you have any questions later, you may call me, Melissa Melville at 612-330-1399 or my thesis advisor Dawn Ludwig at 612-330-1198. You will be given a copy of this consent form to keep for your records.

Statement of Consent:
I have read the above information or have had it read to me. I have received answers to questions asked. My return of the survey is my consent to participate.

Appendix F

Spearman's rho nonparametric correlational data

		Variable 8	Variable 10
Variable 8; Feeding Intention	Correlation Coefficient	1.000	.325*
	Sig. (2-tailed)	.	.038
	N	43	41
Variable 10; Timing of decision	Correlation Coefficient	.325*	1.000
	Sig. (2-tailed)	.038	.
	N	41	41

*Correlation is significant at the .05 level (2-tailed)

Appendix G

Spearman's rho nonparametric correlational data

		Variable 8	Variable 9
Variable 8; Feeding Intention	Correlation Coefficient	1.000	.502**
	Sig. (2-tailed)	.	.002
	N	43	35
Variable 9; Reasoning for method chosen	Correlation Coefficient	.502	1.00
	Sig. (2-tailed)	.002	.
	N	35	35

** Correlation is significant at the .01 level (2-tailed)

Appendix H

Spearman's rho nonparametric correlational data

		Variable 8	Variable 13
Variable 8: Feeding intention	Correlation Coefficient	1.000	.339*
	Sig. (2-tailed)	.	.030
	N	43	41
Variable 13; Father's preference	Correlation Coefficient	.339*	1.000
	Sig. (2-tailed)	.030	.
	N	41	41

* Correlation is significant at the .05 level (2-tailed)